

VITA
Professor Zhidong Bai

PERSONAL:

Citizenship: Citizen of PRC, Employed in NENU, PRC
Office address: Dept. of Math. North East Normal University
Birth Place: Hebei, China
Birth Date: Nov. 27, 1943

EDUCATION:

Ph. D. in Statistics, May, 1982
Thesis Title: Independence of Random Variables and Its Applications
University of Science and Technology of China, Hefei, Anhui, China

RESEARCH GRANT AWARDS:

NSF, DMS 9408799, \$20400/YR \times 3 YRS, July 1994 - June 1997.
NUS Grant R-155-000-002-112, **Exact Separation of the Support of Limiting Spectral Distribution of Large Dimensional Sample Covariance Matrices.** S\$126,900.
March 1998-March 2000
NUS Grant R-155-000-006-112 (with Chen Zehua), **Statistical methods based on ranks: The generalized ranked set sampling and mode estimation using order statistics.** S\$15,232, Sep. 1999-Sep. 2001.
NUS Grants R-155-000-014-112, **Stochastic type limiting theorems in spectral analysis of random matrices.** S\$16,890. April 2000-April 2001.
NUS Grant R155-000-015-112 (with Hu Feifang), **Optimal Sequential Designs for Medical Studies.** S\$76,895, July 2000-July 2003.
NUS Grant R155-000-030-112 (with Hu Feifang), **Adaptive Designs with Covariates Studies.** S\$121,290, July 2001-July 2003.
NUS Grants R-155-000-030-112, **Adaptive Designs with Covariates** S\$121,290. June 2002-June 2005.
NUS Grant R155-000-040-112, **Central limiting theorems in spectral analysis of Dimensional random matrices.** S\$74,0445, Nov. 2003-Nov. 2005.
NUS Grant R155-000-056-112, **Random matrix theory and applications to wireless communications** S\$80,065, Nov. 2005-Oct. 2007.
NUS Grant R155-000-061-112, **Making Markowitz's principle practically useful and its applications to Finance** S\$82,150, Sep. 2006-Aug. 2008.

HONOURS AND MEMBERSHIP:

Fellow of the Institute of Mathematical Statistics (USA)
elected in April 1995
Fellow of the Third World Academy of Science
elected in February 1990 and promoted in Nov. 1992
Ordinary Member of International Statistical Institute

Member of IMS
 Member of International Chinese Statistician Association (ICSA)
 Member of Chinese Society of Mathematics
 Member of Chinese Association of Probability and Statistics

EMPLOYMENT:

| | |
|------------------------|--|
| May, 2002-Present | <u>Professor</u> Dept. of Math. Northeast Normal University |
| Jan. 1999-May, 2002 | <u>Professor</u> Dept. of Stat.& Applied Probab. Nat. Univ. of Singapore |
| August 1997-Jan. 1999 | <u>Senior Fellow</u> Dept. of Mathematics Nat. Univ. of Singapore |
| October 1994-July 1997 | <u>Professor</u> Dept. of Applied Math. National Sun Yat-Sen Univ. Kaohsiung |
| Sept. 1990- June 1994 | <u>Associate Professor</u> Department of Statistics, Temple University Philadelphia, PA 19122 |
| Sept. 1988-Aug. 1990 | <u>Senior Research Associate</u> Center for Multivariate Analysis Penn State University, University Park, PA 16802 |
| Sept. 1984-Aug. 1988 | <u>Visiting Research Associate</u> <u>Center for Multivariate Analysis</u> University of Pittsburgh, Pittsburgh, PA 15260 |
| 1982-August 1984 | <u>Instructor and Associate Professor</u> Department of Mathematics University of Science and Technology of China Hefei, Anhui, China |

TEACHING EXPERIENCE:

Dept. of Math. North East Normal University
 May-Present (Limiting Theorems)

Dept. of Stat. & Applied Prob. National Univ. Of Singapore
 1997 Fall -2002,May MA 4245 (Time Series Analysis)
 MA4246 (Multivariate Analysis)
 MA4243 (Nonparametric Statistics)
 ST 4207 (Nonparametric and Robust Statistics)
 ST5214 (Advanced Probability)

Dept. of Applied Mathemaatics, National Sun Yat-sen University
 1994 Fall - 1997 spring
 (Linear Regression, Probability Theory II, Time Series Analysis)

Department of Statistics, Temple University
 1990 Fall -1994 Spring Stat 012 (Mathematics, A core course of UG in Business)
 Stat 021 (Stat. Thinking for Managers, A core course of UG in business)
 Stat 021 (Statistics by Examples, A core course of UG in Business)

| | | |
|--|-------------------------|---|
| | Stat 401 | (Mathematics for MBA) |
| | Stat 510 | (Measure Theory and Probability) |
| | Stat 515 | (Matrix Theory and Applications in Statistics) |
| | Stat 601 | (Point Estimation, Ph. D. core course) |
| | Stat 602 | (Testing Statistical Hypothesis, Ph. D. core course) |
| | Stat 701 | (Seminar course on Edgeworth Expansions) |
| | Stat 701 | (Seminar course on Bootstrap, Theory and Application) |
| | Stat 702 | (Seminar course on Robust Estimation) |
| Department of Mathematics and Statistics, University of Pittsburgh | | |
| 1986-1987 | Stat 360 | (Advanced Statistics) |
| | Stat 360 | (Limit Theorems in Probability) |
| Department of Mathematics, Univ. of Science and Tech. of China, Anhui, China | | |
| 1981-1984 | Mathematical Analysis | Real Analysis |
| | Probability Theory | Characteristic functions |
| | Introductory Statistics | Analytical Probability Theory |
| Beijing Institute of Computer Science | | |
| 1979-1980 | Linear Algebra | probability Theory |

MEMBERSHIP OF PH. D. COMMITTEES

| | | |
|----------------------|--------------|--|
| Dr. Sun, Zhigang, | (July, 1993) | Dept. Stat. Temple University (Chairman) |
| Thesis Title | | Bias reduction in nonparametric density estimation |
| Dr. Hu, C. Raymond, | (July, 1993) | Dept. Stat. Temple University (Chairman), |
| Thesis Title | | Nonlinear regression estimation in compartment models |
| Mr. Chen, Yusong, | (July 1994) | Dept. Stat. Temple University (CoChairman), |
| Thesis Title | | M and GM recursive algorithm in AR(p) models and some robust sample autocorrelations |
| Dr. Vargas, J. A., | (June, 1992) | Dept. Stat. Temple University |
| Dr. Chakravarty, A., | (July, 1992) | Dept. Stat. Temple University |
| Dr. Cheung, Albert, | (June, 1991) | Dept. Stat. Temple University |
| Dr. Saranadasa, H., | (June, 1991) | Dept. Stat. Temple University |

VISITING ACTIVITIES:

| | | |
|-------------|------|--|
| Nov. 1994 | Talk | Spectral Analysis of large dimensional matrices and its applications Dept. Stat. Chengkung University, Taiwan |
| Jan. 1993 | Talk | Effect of High Dimension Inst. of Math. Nankai University, China |
| | Talk | Effect of High Dimension Dept. of Math. Anhui University, China |
| | Talk | 1) Education of Statistics in USA |
| | Talk | 2) Effect of High Dimension Dept. of Math. Univ. of Sci. & Tech. of China, China |
| August 1992 | Talk | The convergence rate of spectral distributions of large random matrices |

Inst. of Math., Academia Sinica, Taiwan
 Effect of High Dimension
 Inst. of Stat., Academia Sinica, Taiwan
 Recursive Algorithm for computing
 M-estimators in linear models
 Inst. of Stat., Chinghua University, Taiwan

| | | |
|---------------|--------------|--|
| March 1992 | Talk | The convergence rate of spectral distributions of large random matrices Consultation with Dr. Jack W. Silverstein Dept. of Math. NC State University |
| November 1991 | Talk | The effect of high dimension Dept. of Math. and Stat. Miss State University |
| August 1987 | Consultation | Prof. T. W. Anderson Department of Statistics, Stanford University |
| May 1987 | Invited by | Prof. Jeff Wu Dept. Stat. Univ. of Wisconsin at Madison Talk on Recent Contributions by Chinese Statisticians |
| July 1985 | Invited by | Prof. J. C. Fu Dept. Stat. Univ. of Manitoba, Canada |
| April 1985 | Invited by | Prof. L. K. Chan Dept. Stat. Univ. of Manitoba, Canada |
| Oct. 1984 | Invited by | Professor S. Geman Division of Applied Math., Brown University Talk on Contributions to Large Dimensional Random Matrices |

CONFERENCES ATTENDED:

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| 10-16 March 2002. Oberwolfach, Germany. | <Probability and Statistics of Random Algebraic Structures Conference>, (60 m's, Financial support from Organizer) |
| 20 - 24 September 2002 | <Annual Conference of Chinese Probability and Statistics Association>. (45 m's) |
| Dec. 10-14,2000 Kyushu, Japan , | <<The 3rd Conference on Nonlinear Time Series Analysis>> Talk entitle: Multi-step Prediction for nonlinear autoregressive models based on empirical distributions. (1 hour, Financial support from Organizer). |
| 17-19, August, 2001 Hong Kong, | The 5th ICSA international conferences talk title: "Generalized Polya Urn Model and applications" Chair of Section "Experiment Designs". |
| June 5 - June 9, 2000 Sanbjerg, Danmark | <Free Probability and Random Matrices> Talk: Methodologies in spectral analysis of large dimensional random matrices (45 m's, Financial support from Organizer) |
| May 1994 | Anual confenrence of ASA Toronto, Canada |

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|-------------|--|------------------------|
| Jan. 1994 | International Conference of Multivariate Analysis | Academia Sinica, TW |
| May 1992 | 7th International Conference of Multivariate Analysis | State College, PA. |
| August 1991 | ASA | Atlanta, GA. |
| August 1989 | ASA | Washington D.C. |
| April 1989 | SDIO | Washington D.C. |
| August 1988 | IEEE on ASSP | Minneapolis, Minnesota |
| June 1988 | SDIO | Washington D.C. |
| Nov. 1986 | IEEE Workshop on ASSP | Boston, MA |

ACADEMIC RESPONSIBILITIES:

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|---------------------|--|
| Editor of | <i>Journal of Multivariate Analysis</i> |
| Associate editor of | <i>Journal of Statistical Planning and Inference</i> |
| Associate editor of | <i>Sankya</i> |
| Associate editor of | <i>Statistica Sinica</i> |
| Reviewer of | <i>Mathematical Review</i> |
| Reviewer of | <i>Zentralblatt Für Mathematik</i> |

PUBLICATIONS: 1) Monographs and Books

References

- [1] Chen, Zehua; Bai, Zhidong; Sinha, Bimal K. (2004) *Ranked set sampling. Theory and applications*. Lecture Notes in Statistics, 176. Springer-Verlag, New York. 2004. xii+224 pp. ISBN: 0-387-40263-2.
- [2] Bai, Z. D. and Silverstein, J. W. (2006) *Spectral Analysis of Large Dimensional Random Matrices*. (English) 1st Edition, Science Press, Beijing. ISBN: 7-03-017766-5. (2010) 2nd edition, Springer and Science Press, ISBN:978-1-4419-0660-1.
- [3] Lin Zhengyan and Bai Z. D. (2006) *Inequalities in Probability*. (Chinese). 1st Edition, Science Press, Beijing. ISBN: 7-03-017421-6.
- [4] Bai, Z. D. Fang, Z. B. and Liang, Y. C. (2009) *Spectral Theory of Large Dimensional Random Matrices and Its Applications to Wireless Communications and Finance Statistics*. (English) 1st Edition, University of Science and technology of China Press, Hefei. ISBN: 978-7-312-02274-6.
- [5] Bai, Z. D., Zheng, S. R., and Jiang, Dandan (2012) *Large Dimensional Statistical Analysis* (Chinese), Press of High Education, Beijing. ISBN 978-7-04-034830-9.
- [6] Yao, Jianfeng, Zheng, Shurong, and Bai, Z. D. (2015) *Large Sample Covariance Matrices and High-Dimensional Data Analysis*. (English) Cambridge University Press. New York, London. ISBN 978-1-107-06517-8.

2) Significant articles

References

- [1] Zheng, Shurong; Bai, Zhidong; Yao, Jianfeng (2017) CLT for eigenvalue statistics of large-dimensional general Fisher matrices with applications. *BERNOULLI*, **Vol. 23 No: 2**, pp 1130-1178.
- [2] Bai, Zhidong; Hu, Jiang; and Pan, Guangming; (2015) Convergence of the empirical spectral distribution function of Beta matrices. *Bernoulli* **Vol. 21 No. 3**, pp 1538-1574.
- [3] Wang, Chen; Jin, Baisuo; Bai, Z. D. Nair, K., Krishinan, and Harding Matthew (2015) Strong Limit Of The Extreme Eigenvalues Of A Symmetrized Auto-Cross Covariance Matrix. *Annals Of Applied Probability*. **Vol. 25, No. 6.** pp 3624-3683.
- [4] Zheng, Shurong; Bai, Zhidong; and Yao, Jianfeng (2015) Substitution principle for clt of linear spectral statistics of high-dimensional sample covariance matrices with applications to hypothesis testing. *Annals of Statistics*, **43 No. 2**, pp 546-591.
- [5] Zheng, Shurong; Jiang, Dandan; Bai, Zhidong and He, Xuming (2014) Inference on multiple correlation coefficients with moderately high dimensional data. *Biometrika* **Vol. 101 No. 3** pp 748-754.
- [6] Jin, Baisuo, Wang, Chen, Z. D. BAI, Nair, K., Krishinan, and Harding Matthew (2014) Limiting Spectral Distribution of a Symmetrized Auto-cross Covariance Matrix. *Annals of Applied Probability*, **Vol. 24, No. 3**, 1199-1225. DOI: 10.1214/13-AAP945
- [7] Xia, Ningning, Qin, Yingli, and Bai, Z. D. (2013) Convergence Rates of Eigenvector Empirical Spectral Distribution of Large Dimensional Sample Covariance Matrix. *Ann. Statist.* **41, No. 5** , 2572-2607.
- [8] Bai, Z. D. and Pan, G. M. (2012) Limiting behavior of Eigenvectors of large Wigner matrices. *Journal of Statistical Physics*, **Vol 146, No. 3**, 519-549.
- [9] Bai, Z. D., Liu, H. X., and Wong, W. K. (2011) Asymptotic Properties Of Eigenmatrices Of A Large Sample Covariance Matrix *Annals Of Applied Probability*, **bf 21 No. 5**, 1994-2015. Doi: 10.1214/10-Aap748
- [10] Babu GJ, Bai ZD, Choi KP and Mangalam, Vasudevan (2011) Limit theorems for functions of marginal quantiles *Bernoulli*, **Vol 17 No. 2** 671-686.
- [11] Couillet R, Silverstein JW, Bai ZD, and Debbah, Merouane (2011) Eigen-Inference for Energy Estimation of Multiple Sources. *IEEE International Symposium on Information Theory*, **JUN 13-18, 2010 Austin, TX. IEEE Transactions On Information Theory Vol 57, No. 4** 2420-2439.
- [12] Bai, Z. D., Wang, Xiaoying, and Zhou, Wang (2010) Functional CLT for sample covariance matrices *Bernoulli*, **16(4)**, 1086–1113.
- [13] Bai, Z. D., Jiang, Dandan, Yao, and Zheng, Shurong (2009) Corrections to LRT on large-dimensional covariance matrix by RMT. *Ann. Statist.* **Vol. 37, No. 6B**, 3822–3840.
- [14] Bai, Z. D., Liu, H. X., and Wong, W. K. (2009) Enhancement of the applicability of markowitz's portfolio optimization by utilizing random matrix theory. *Mathematical Finance*, **Vol. 19, No. 4**, 639–667.
- [15] Liang Y. C., Pan G. M. and Bai, Z. D. (2007) Asymptotic performance of MMSE receivers for large systems using random matrix theory. *IEEE Transactions On Information Theory* **53 (11)**: 4173–4190

- [16] Wang, You-Gan; Lin, Xu; Zhu, Min; Bai, Zhidong, (2007) Robust Estimation Using the Huber Function With a Data-Dependent Tuning Constant *Journal of Computational and Graphical Statistics*, **Vol 16, No. 2**, pp. 468-481.
- [17] Bai, Z. D., Miao, P. Q. and Pan, G. M. (2007) On asymptotics of eigenvectors of large sample covariance matrix. *Ann. Probab.* **Vol. 35, No. 4**, 1532 - 1572.
- [18] Bai ZD, Silverstein JW (2007) On the Signal-to-Interference-Ratio of CDMA Systems in Wireless Communications. *Annals of Applied Probability*, **Vol. 17 (1)** pp 81-101.
- [19] Bai ZD, Zhang LX (2006) Semicircle Law for Hadamard Products. *SIAM J. Matrix Analysis and Applications*, **Vol. 29, No. 2**, pp. 473 - 495.
- [20] Bai, Z. D., Lee, Sungchul and Penrose, Mathew D. (2006) Rooted edges of a minimal directed spanning tree on random points. *Adv. in Appl. Probab.* **38, No. 1**, 1–30.
- [21] Bai Z. D. and Yao J. (2005) On the convergence of the spectral empirical process of Wigner matrices. *Bernoulli* **11 (6)**. 1059-1092.
- [22] Bai, Z. D. and Hsing, T. L. (2005) The broken sample problem. *Probab. Theory and Rel. Fields.* **131**, 528-552
- [23] Bai, Z. D. and Hu, Feifang (2005) Asymptotics in Randomized Urn Models. *Annals of Applied Probab.* **Vol. 15 Issue 1B**, p914-940.
- [24] Bai, Z. D. and Silverstein, Jack W. (2004) CLT for linear spectral statistics of large-dimensional sample covariance matrices. *Ann. Probab.* **32, No. 1A**, 553–605.
- [25] Bai, Z., Hu, F. and Rosenberger, W.F. (2002). Asymptotic properties of adaptive designs for clinical trials with delayed response. *Ann. Statist.* **Vol 30, No 1**, 122-139.
- [26] Bai, Z. D., Hu, F. F. and Zhang, L. X. (2002) Gaussian approximation theorems for urn models and their applications *Ann. Appl. Probab.* **12 (4)**: 1149-1173.
- [27] Guo, M. H. Huang, Mong-Na Lo, Y. H. Chen, Bai, Z. D. and Hsieh, Kai-Sheng Hsieh (2001) Important ECG diagnosis aiding indices of ventricular defect children with or without congestive heart failure. *Statistics in Medicine*, **Vol. 20** 1125-1141.
- [28] Bai, Z. D. and He, X. M. (1999) Asymptotic distributions of the maximal depth estimators for regression and multivariate location. *Ann. Statist.* **27**, No. 5, 1616-1637.
- [29] Bai, Z.D. and Silverstein, Jack W. (1999) Exact separation of eigenvalues of large dimensional sample covariance matrices. *Ann. Probab.* **Vol. 27**, No. 3, 1536-1555.
- [30] Bai, Z. D., Chao, C. C., Hwang, H. K. and Liang, W. Q. (1998) On the variance of the number of Maxima in random vectors and its applications. *The Annals of Applied Probab.* **Vol. 8**, No. 3, 886-895.
- [31] Z. D. Bai and J. W. Silverstein (1998) No eigenvalues outside the support of the limiting spectral distribution of large dimensional sample covariance matrices. *Ann. Probab.* **Vol. 26**, No. 1, 316-345.
- [32] Zhao, L. C., Bai, Z. D., Chao, C. C. and Liang, W. Q. (1997) Error bound in a central limit theorem of double indexed permutation statistics. *Annals of Statistics.* **Vol. 25**, No. 5, 2210–2227.
- [33] Z. D. Bai (1997) Circular Law. *The Ann. of Probab.* Vol. 25, No. 1, 494-529.
- [34] Bai, Z. D. (1993) Convergence rate of Expected spectral distributions of large random matrices. Part I. Wigner Matrices. *Ann. Probab.* Vol. 21, No. 2, 625-648.
- [35] Bai, Z. D. (1993) Convergence rate of expected spectral distributions of large random matrices. Part II. Sample Covariance Matrices. *Ann. Probab.* Vol. 21, No. 2, 649-672.

- [36] Bai, Z. D., Yin, Y. Q. (1993) Limit of the smallest eigenvalue of large dimensional covariance matrix. *Ann. Probab.* Vol. 21, No. 3, 1275-1294.
- [37] Bai, Z. D. and Rao, C. R. (1991) Edgeworth expansion of a function of sample means. *Ann. Stat.*, **19**, No. 3, 1295-1315.
- [38] Bai, Z. D., Chow, Mosuk (1991) Inadmissibility of the maximum likelihood estimator in the sequential estimation of the size of a population. *Biometrika*, **78**, No. 4, pp 817-823.
- [39] Bai, Z. D., Chen, X. R., Krishnaiah, P. R., Wu, Y. H. and Zhao, L. C. (1991) Strong consistency of maximum likelihood parameter estimation of superimposed exponential signals in noise. *Teor. Veroyatnostei i ee Premen.* Vol. 36, NO. 2, 392-397. Or *Theory of Probability and its Applications*, 36, 2, 349-355 (English Edition).
- [40] Bai, Z. D., Krishnaiah, P. R., Rao, C. R., Reddy, C. S. Sun, Y. N. and Zhao, L. C. (1989) Reconstruction of the left ventricle from two orthogonal projections. *Computer Vision, Graphics, Image Processing*, Vol. 47, 165-188.
- [41] Bai, Z. D. (1989) A theorem of Feller revisited. *Ann. Probab.*, Vol. 17, No. 1, 385-395.
- [42] Bai, Z. D., Krishnaiah, P. R., Rao, C. R., Sun, Y. N. and Zhao, L. C. (1989) Reconstruction of the shape and size of objects from two orthogonal projections. *Math. Comput. Modeling*, Vol. 12, No. 3, 267-275.
- [43] Yin, Y. Q., Bai, Z. D. and Krishnaiah, P. R. (1988) On the limit of the largest eigenvalue of the large dimensional sample covariance matrix. *Probab. Theory and Rel. Fields*, Vol. 78, 509-521.
- [44] Bai, Z. D. and Yin, Y. Q. (1988) Convergence to the semicircle law. *Ann. Probab.*, Vol. 16, No. 2, 863-875.
- [45] Bai, Z. D. and Yin, Y. Q. (1988) Necessary and sufficient conditions for almost sure convergence of the largest eigenvalue of Wigner matrix. *Ann. Probab.*, 16, 4, 1729-1741.
- [46] Bai, Z. D. and Yin, Y. Q. (1986). Limiting behavior of the norm of products of random matrices and two problems of Geman-Hwang. *Probab. Theory and Rel. Fields*, Vol. 73, 555-569.
- [47] Bai, Z. D. and Zhao L. C. (1985). Asymptotic expansions of sums of independent random variables. *Scientia Sinica*, Vol. 28, No. 8, 677-697 (Chinese version); Vol. 29, No. 1, 1-22 (1986, English version).
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- [49] Yin, Y. Q., Bai, Z. D. and Krishnaiah, P. R. (1983). Limiting behavior of the eigenvalues of a multivariate F matrix. *J. Multivariate Anal.*, Vol. 13, 508-516.
- [50] Bai, Z. D. and Su, C. (1982) The solution of a problem posed by Linnik and Ostrovski. *Scientia Sinica*, Vol. 27, No. 7, 680-692.
- [51] Bai, Z. D. (1982). A negative answer to a question of Linnik and Ostrovski's. *Kexue Tongbao*, Vol. 27, No. 12, 1259-1261.
- [52] Bai, Zhidong and Su, Chun (1980). On the Lebesgue decomposition of the multidimensional infinitely divisible distributions. *The Journal of China University of Science and Technology*, (hereafter *JCUST* Vol. 10, No. 4, 76-95.

3) Refereed articles with general importance

- [53] Hu, Jiang; Bai, Zhidong; Wang, Chen, Wang, Wei (2017) On testing the equality of high dimensional mean vectors with unequal covariance matrices. *Annals Of The Institute Of Statistical Mathematics*. **Vol. 69 No. 2.** pp 365-387.

- [54] Li, Huiqin; Hu, Jiang; Bai, Zhidong, (2017) Test on the linear combinations of mean vectors in high-dimensional data. *Test*. **Vol. 26 No. 1** pp 188-208 : MAR 2017.
- [55] Hu, Jiang; Bai, Zhidong; Wang, Chen, Yin, Y. Q, and Zou, K. X. (2017) On testing the equality of high dimensional mean vectors with unequal covariance matrices. *Annals Of The Institute Of Statistical Mathematics*. **Vol. 69 No. 2**, pp 365-387.
- [56] Hu Jiang; and Bai ZhiDong (2016) A review of 20 years of naive tests of significance for high-dimensional mean vectors and covariance matrices. *Science China-Mathematics* **Vol. 59 No. 12, SI.**, pp 2281-2300.
- [57] Yin, Yanqing; Bai, Zhidong; Hu, Jiang (2016) On the Semicircular Law of Large-Dimensional Random Quaternion Matrices. *Journal Of Theoretical Probability*. **Vol. 29 No. 3**. pp 1100-1120.
- [58] Li, Huiqin; Bai, ZhiDong; Hu, Jiang (2016) Convergence of empirical spectral distributions of large dimensional quaternion sample covariance matrices. *Annals Of The Institute Of Statistical Mathematics*. **Vol. 68 No. 4**. pp 765-785.
- [59] Bai, Z. D.; Li, Hua, Mcchael; and Wong, W. K. (2015) Stochastic dominance statistics for risk averters and risk seekers: an analysis of stock preferences for USA and China *Quantitative Finance*, **Vol. 15 No. 5** pp 889-900.
- [60] Zheng, Shurong; Bai, Zhidong; Yao, Jianfeng (2015) CLT for linear spectral statistics of a rescaled sample precision matrix. *Random Matrices-Theory And Applications*, **Vol. 4 No. 4**,
- [61] Li, Huiqin; and Bai, Z. D. (2015) Extreme eigenvalues of large dimensional quaternion sample covariance matrices *Journal Of Statistical Planning And Inference*, **Vol. 159**, pp 1-14.
- [62] Li, Huiqin; and Bai, Z. D. (2015) Convergence rates of spectral distributions of large dimensional quaternion sample covariance matrices *Journal Of The Korean Statistical Society*, **Vol. 44 No. 1**, pp 28-44.
- [63] Xia, Ningning; and Bai, Z. D. (2015) Functional CLT of eigenvectors for large sample covariance matrices *Statistical Papers*, **Vol. 56 No. 1**, pp 23-60.
- [64] Bai, Z. D. and Wang, Chen (2015) A note on the limiting spectral distribution of a symmetrized auto-cross covariance matrix *Statistics & Probability Letters* **Vol. 96**, pp 333-340.
- [65] Yin, Yanqing; and Bai, Z. D. (2014) Convergence Rates of the Spectral Distributions of Large Random Quaternion Self-Dual Hermitian Matrices *Journal Of Statistical Physics*, **Vol. 157 No. 6**, pp 1207-1224.
- [66] Hu, Jiang and Bai, Z. D. Strong representation of weak convergence *Science China-Mathematics*, **Vol. 57 No. 11**, pp 2399-2406.
- [67] Yin, Yanqing, Bai, Zhidong, and Hu, Jiang (2014) On the limit of extreme eigenvalues of large dimensional random quaternion matrices. *Physics Letters A*, **378**, 10491058.
- [68] Liu, Tianqing; Bai, Zhidong; Zhang, Baoxue (2014) Weighted estimating equation: modified GEE in longitudinal data analysis. *Frontiers of Mathemtics in China* **Vol: 9 No: 2**, 329-353.
- [69] Li, W. M., Chen, J. Q., Qin, Y. L., Bai, Z. D., and Yao, J. F. (2013) : Estimation of the population spectral distribution from a large dimensional sample covariance matrix. *Journal of Statistical Planning and Inference*. **Vol. 143 No. 11**, P 1887–1897. DOI: 10.1016/j.jspi.2013.06.017.
- [70] Zhao, Ningning and Bai, Zhidong (2013,9) Analysis of rounded data in measurement error regression. *Journal of The Korean Statistical Society*, **Vol. 42, No. 3**, pp: 415-429. DOI: 10.1016/j.jkss.2013.01.003

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- [72] Bai, Zhidong, Phoon, Kok Fai, Wang, Keyan, and Wong, Wing-Keung 2013,8 The performance of commodity trading advisors: A mean-variance-ratio test approach. *North American Journal Of Economics And Finance*, **Vol 25, special Issue: SI** 188-201 DOI: 10.1016/j.najef.2012.06.010
- [73] Jiang DanDan; Bai ZhiDong; Zheng ShuRong (2013) Testing the independence of sets of large-dimensional variables *Science China-Mathematics* **Vol. 56 No. 1**, p 135-147. DOI: 10.1007/s11425-012-4501-0.
- [74] Zhao, Ningning and Bai, Zhidong (2012) Analysis of rounded data in mixture normal model, *Statistical Papers*. **Vol. 53, No. 4**, 895-914.
- [75] Bai, Zhidong; Hui, Yongchang; Wong, Wing-Keung; (2012) Prospect Performance Evaluation: Making a Case for a Non-asymptotic UMPU Test. *Journal Of Financial Econometrics*, **Vol. 10, No. 4**, 703-732. DOI: 10.1093/jjfinc/nbr020
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